

Patent claims:

1. Process for producing a nanoelement arrangement,
in which
 - first of all a first nanoelement is formed,
 - then the first nanoelement is covered, in at
least one predetermined region, with catalyst
material for catalyzing the growth of
nanoelements; and
 - at least one second nanoelement is grown on the
catalyst material.
2. Process according to Claim 1, in which the
catalyst material is applied to the first
nanoelement in the form of at least one cluster.
3. Process according to Claim 1 or 2, in which the
catalyst material is applied to the first
nanoelement by the first nanoelement being brought
into operative contact with a suspension
comprising clusters of catalyst material, and then
the first nanoelement with at least one cluster
attached to it being removed from the suspension.
4. Process according to Claim 3, in which the first
nanoelement with the at least one cluster attached
to it is resuspended and is applied to a
substrate.
5. Process according to one of Claims 2 to 4, in
which the first nanoelement with at least one
cluster attached to it is subjected to a process
step for forming the at least one second
nanoelement, in such a manner that the at least
one second nanoelement is grown on the at least
one cluster.

6. Process according to Claim 5, in which a chemical vapour deposition process is used to form the at least one second nanoelement.
- 5 7. Process according to one of Claims 1 to 6, in which the catalyst material between the first and the at least one second nanoelement is nickel-plated.
- 10 8. Process according to one of Claims 1 to 7, in which a partial region of the first nanoelement is covered with a protective layer which has no catalytic action for the growth of nanoelements.
- 15 9. Process according to Claim 8, in which the protective layer used is
- resist;
 - surfactant;
 - an organic material;
 - 20 • an oxidized material; or
 - a metal which has no catalytic action for the growth of nanoelements.
10. Process according to one of Claims 1 to 9, in which the catalyst material used is
- 25
- iron
 - cobalt
 - nickel and/or
 - an alloy of these metals with aluminium,
 - 30 titanium, molybdenum and platinum.
11. Nanoelement arrangement
- having a first nanoelement, which in at least one predetermined region is covered with
 - 35 catalyst material for catalyzing the growth of nanoelements; and
 - having at least one second nanoelement, which is grown on the catalyst material.

12. Nanoelement arrangement according to Claim 11, in which only part of the first nanoelement is covered with catalyst material for catalyzing the growth of nanoelements.
- 5 13. Nanoelement arrangement according to Claim 11 or 12, in which the first nanoelement is grown in a pore introduced in a substrate.
- 10 14. Nanoelement arrangement according to Claim 13, in which the first nanoelement is grown in the pore on a metallization plane in the substrate.
- 15 15. Nanoelement arrangement according to one of Claims 11 to 14, in which the first and/or the at least one second nanoelement and/or at least one additional nanoelement are grown on top of one another and/or next to one another.
- 20 16. Nanoelement arrangement according to one of Claims 11 to 15, in which the first and/or the at least one second nanoelement includes
- a nanotube
 - a bundle of nanotubes or
 - 25 • a nanorod.
17. Nanoelement arrangement according to Claim 16, in which the nanorod includes
- silicon
 - 30 • germanium
 - indium phosphide
 - gallium nitride
 - gallium arsenide
 - zirconium oxide and/or
 - 35 • a metal.
18. Nanoelement arrangement according to Claim 16, in which the nanotube is

- a carbon nanotube
 - a carbon-boron nanotube
 - a carbon-nitrogen nanotube
 - a tungsten sulphide nanostructure or
 - 5 • a chalcogenide nanotube.
19. Nanoelement arrangement according to Claim 16, in
which the first and/or the at least one second
nanoelement is a carbon nanotube, and in which the
10 catalyst material includes
- iron
 - cobalt
 - nickel and/or
 - an alloy of these metals with aluminium,
 - 15 titanium, molybdenum and platinum.
20. Nanoelement arrangement according to one of Claims
11 to 19, which includes an integrated circuit
which is coupled to the first and/or the at least
20 one second nanoelement.
21. Nanoelement arrangement according to one of Claims
11 to 20, in which the nanoelements form a
multiply branched network.
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